

VAN LENNEP (Wm B.)



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APPENDICITIS,

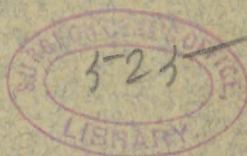
WITH ESPECIAL REFERENCE TO ITS DIAGNOSIS AND
THE INDICATIONS FOR OPERATION.

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BY

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PHILADELPHIA, PA.

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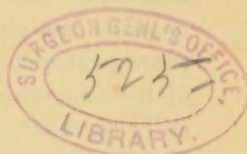
APPENDICITIS,

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ESPECIAL REFERENCE TO ITS DIAGNOSIS AND THE
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WM. B. VAN LENNEP, A.M., M.D.,
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IT has been said that the first indication in appendicitis is to call in the surgeon. There is a great deal of truth in this, and the advice is no doubt safe. Particularly was this the case before the profession generally, as well as the laity, had become thoroughly awakened to the fact that there is such a disease as appendicitis, that it causes a great many deaths, and that surgery is essential to prevent a fatal issue.

Still, when we remember that probably some 70 per cent. of attacks get well without surgical treatment, the statement made in a recent work on this subject that "the physician should know just when to summon the surgeon" (Talamon), deserves at least to be a corollary to the one quoted above.

I am frequently asked by physicians for definite indications calling for surgical interference, as it is often both inconvenient and unnecessary to summon surgical counsel for any and every case in which appendicitis is diagnosed. This is particularly so with those living at a distance.

A careful perusal of the very abundant current literature of the subject does not seem to give any very definite data, at least in a form that can be readily grasped; and it is probable that the formulation of hard and fast rules is an impossibility. On the other hand, as I have before stated, my experience proves that we do not operate in appendicitis often enough, and, particularly, not early enough.

* Read before the Pennsylvania State Homœopathic Medical Society, September 17th, 1894.

What is still more important, I do not think the disease is generally recognized in time.

This subject has been much in my mind during the past year, and it has occurred to me that a paper based upon a study of my total experience with the disease might serve as an incentive to discussion at our State Society meeting, might perhaps help some one to recognize appendicitis in time, or successfully decide the question of surgical interference.

In a purely clinical paper it is hardly necessary to enter into a detailed review of the pathology, particularly as this subject is still more or less obscure. The old and popular "seed" theory is, of course, abandoned, foreign bodies forming such a small proportion of the concretions found in the appendix. The stercoral theory is still supported, and is supposed to be the cause of most attacks, the escape of the coprolith, or, more correctly, the soft faecal mass, bringing the seizure to an end, while its retention ultimately produces pressure, necrosis and perforation. As the rupture is usually at a distance from the concretion, it is more than likely that its pressure induces other changes which seem to have a more direct causal relation than pressure.

The circulation theory has recently attracted much attention, and with apparent reason, too. The blood supply of the appendix, beyond a few minor anastomoses with the caecum, is of the terminal or end-artery variety, coming through an easily stretched meso-appendix. Hence, sagging of the caecum, bends or distension of the little organ, pressure of concretions, may so interfere with the nutrition of the appendix as to cause local or general death. This theory is supported by the fact that the disease occurs four or five times more frequently in the male than in the female, the appendix of the latter deriving an additional blood supply through the appendiculo-ovarian ligament (Clado). This observation may account for the frequency with which the appendix is found in the female pelvis. It may be worth remembering that every case I have seen in the female has begun to menstruate soon after the onset of the attack.

To add to the danger of circulatory disturbances, we have the fact that the appendix is a functionless remnant of evolution, and, as such, its tissues have a low power of resistance to morbid processes. Besides being outside of the direct faecal current, its walls are but poorly supplied with circular muscular fibres, which lessens its expulsive power. Given then a structure with a low grade of vitality, and let its imperfect internal lining membrane become destroyed by

circulatory changes, sudden or gradual, or by pressure from within by concretions or accumulations, or by inflammatory processes, acute or chronic, and we have the door wide open for the micro-organism theory, supported by the almost invariable presence of the bacterium coli commune, a constant inhabitant of the intestine, and only doing harm when enabled to escape into the circulation, and, especially, into the peritonæum, by defects in the intestinal wall. Other septic micro-organisms have been demonstrated, but with varying constancy.

If we add the chronic trophic and circulatory changes that have been observed and studied in the meso-appendix (Fowler), which are supposed to go on in silence until they arrive at a point where they produce an attack, we have briefly summed up the present status of the pathology of the appendix.

In studying the clinical picture we need a general idea of the symptoms met with in the average case, so that we can arrive at a prompt, nay, an immediate diagnosis, on which the life of the patient so often depends. We should also be familiar with the different phases of the disease and the course of each, so as to be able to arrive at a prognosis on which the question of operation hinges.

An attack of appendicitis usually begins suddenly, with abdominal pain, which may be diffuse or be referred to the umbilicus or epigastrium. It is colicky or paroxysmal in nature and runs through all the grades of severity, from a condition of apparent collapse, to suffering which does not confine the patient to the bed or even to the house. It ultimately settles, as a rule, in the right iliac fossa. With the pain is usually associated vomiting, the ejecta consisting of the contents of the stomach and bile. The bowels are apt to be confined, although diarrhœa may be present. As a cause for such an attack we usually find a dietetic error, overloading the stomach or indulgence in some particular article of food or drink that disagrees, exposure to cold, or overexertion, or, in the female, expected menstruation. I might say, incidentally, that there may be a temperature rise and a pulse acceleration.

Here, then, is a picture calculated to mislead any one not on his guard—an attack of indigestion or menstrual colic. Hence, I would repeat a proposition I have already made, *i.e.*, that every case of *abdominal pain* should be viewed with suspicion, that every case of the kind should be subjected to as rigid a physical examination as one of suspected pleurisy or pneumonia. And why not? Are these and kindred diseases any more frequent, or are they any more fatal

than appendicitis? Do they kill as quickly and, therefore, is an early diagnosis any more important?

The patient is made to lie prone and first observed. The right lower limb is sometimes slightly drawn up, or the patient prefers to lie on the right side, curled up. The abdomen may be somewhat distended, and this distension shows itself more particularly in the right lower segment. So much we have seen. We now palpate, and with a definite purpose, *i.e.*, to find or exclude rigidity of the right rectus muscle, and tenderness, particularly to point pressure over the appendix. The left side of the abdomen is first systematically palpated, with the fingers of one hand, going from above downward, and with gradually deepening pressure, the patient's attention being diverted from our ultimate object. The tension of the two recti is then compared, first one and then the other being lightly and deeply palpated, care being again exercised to prevent voluntary fixation. The right will usually be found more rigid than the left. The right side of the abdomen is then palpated in the same manner as the left. A tenderness will be found in the iliac fossa, and this is verified by comparison with the left side. Lastly, a spot is selected one-third of the distance from the anterior superior spine of the ileum to the umbilicus, on a line drawn between these two points, and the forefinger is pushed into the abdominal wall. A corresponding point on the left side is similarly pressed upon, and control experiments are made over the abdomen generally. This will show undoubted tenderness at this, the McBurney point. Rectal and vaginal examination are of but little value, particularly at this stage.

With this examination and the complexus of symptoms just described we should be able to arrive at a diagnosis of appendicitis, and that at once. There may be variations, there may be occasional difficulties in diagnosis, but with this picture clearly in our mind we can at least recognize the disease at its onset, when it is not associated with other troubles and when it is not obscured by subsequent complications or sequelæ.

As to the varieties of appendicitis we can classify them as follows:

1. Acute appendicitis.
2. Subacute appendicitis.
3. Hyperacute or fulminating appendicitis.

Again, as to the immediate results, we can say that an attack of appendicitis may end by resolution, may go on to a localized, fibrinous peritonitis, or to a septic infection either by perforation or escape of micro-organisms. This septic process may form an abscess, which

very rarely may be extraperitoneal, because a portion of the organ is so situated. In the vast majority of instances, however, this abscess is intraperitoneal, protective adhesions making it a localized, suppurative peritonitis; as a rule, these adhesions date from a previous fibrinous peritonitis; or, in the absence of protective adhesions, a general septic peritonitis may be set up, either rapidly (fulminating) or slowly (sneaking and progressive), according to the quantity of poison thrown out. This is well exemplified by experiments on rabbits with cultures of the common colon bacillus. The intraperitoneal abscess, on the other hand, when the adhesions forming its walls are recent and soft or are subjected to a sudden strain, may leak and produce, according to the extent of the leakage, a fulminating peritonitis, a sneaking one, or one abscess after another among the intestinal coils, until, finally, a general septic inflammation is present. Lastly, the abscess may burrow and open in every conceivable direction and produce the constitutional and local effects of any pus accumulation.

The remote results are of two kinds:

1. Recurring appendicitis.
2. Relapsing, or chronic appendicitis.

In the former, attacks recur with varying frequency and severity, until one of the immediate results mentioned above develops, or, occasionally, until they cease, as time may prove, for good.

In the latter variety the attacks also recur in like manner, but the patient is not free from tenderness and pain in the interim, and, sooner or later, perforation or extra-appendicular infection takes place. In these cases a local fibrinous peritonitis or a small encysted abscess is usually present. Occasionally, when seen, the changes are still confined to the walls and mesentery of the appendix.

Let us now analyze the symptoms a little more fully.

The *facial expression* has been of great use to me, both in a diagnostic, as well as a prognostic sense, and to the experienced eye it will often foretell impending disaster in obscure cases. In the beginning of an attack, the expression means little beyond distress, amounting to the hippocratic face in cases that are collapsed. It is when it indicates the pain of tenderness in the right iliac fossa, at the time of perforation or when abscesses are forming, that it is of value. It is also an important guide in a beginning peritonitis, when we can recognize a suspicion of the facies abdominalis. I well remember the expression of a colleague whose hernia had come down and been but partially reduced, the omentum remaining. The

bowels were moving regularly, and he felt perfectly well, beyond a little local tenderness and fluid effusion, which were attributed to the taxis. I had watched him for several days, when I noticed a beginning haggard look; then he told me of a peculiar burning at the roots of the pubic hair. Incision showed beginning gangrene of the omentum, which was excised and reduced in time.

The *tongue* is almost always coated, flabby, and shows the marks of the teeth. This has become to me a symptom of considerable value, suggestive as well as corroborative. In its absence I would look for additional proof of the correctness of the diagnosis. One of the signs of improvement during the subsidence of an attack is the fact that it clears up and gets firmer.

The *vomiting* is usually that of an overloaded stomach, a beneficial one, and consists of undigested food and bile. It should cease when the stomach is emptied. Persistent, or, later, projectile vomiting, should make us suspect obstruction, while the bubbling over of fluids that seem to well up in the throat, so to speak, whether or not a faecal odor is noticed, is one of the ominous signs of that dread enemy, septic peritonitis.

Distension may be present early and be general, that of constipation, of the arrested or reversed peristalsis of the obstruction or stercoral theory. This disappears with the return of peristalsis. Should it persist and be associated with vomiting, it is a serious condition. In obstruction we have, besides the character of the vomiting, rapid, general distension, intestinal movements that can be seen, as well as distended individual coils of gut, and the presence of gas sounds on auscultation. When this distension comes on after perforation, it is more gradual, associated with the vomiting and face already described, and the intestinal sounds gradually disappear. When they are totally absent the case is hopeless (Richardson). Quite frequently the distension is local, in the right iliac fossa, and is supposed to be due to paresis of the intestinal coils in the immediate neighborhood of the irritated appendix. Such a "tumor" is by no means uncommon at the very beginning, and gives a tympanitic note on percussion. It is to be distinguished from the uncommon, sausage-shaped, doughy, dull tumor resulting from impaction of faeces in the caecum. The later tumor of an encysted abscess is more clean cut, resonant, perhaps, from overlying intestine, and very tender.

Constipation is an almost constant symptom, and may be absolute, no gas being passed until the attack begins to subside. It is also

present in mechanical obstruction and the intestinal paralysis of peritonitis. Freely moving bowels always give us a sense of security in a subsiding or even doubtful case of appendicitis. The treatment of this constipation has caused some discussion. As the appendix is out of the fæcal current, the probabilities are that it is not much affected by a purge; this is dangerous, however, when intestinal coils are walling in a beginning abscess, and hence it should not be given when a distinct, tender tumor is made out. At the onset of an attack, and, in fact, until the vomiting has ceased, purgatives are not kept down, and aggravate the latter. Hence, resort should be had to enemata, low and high, of plain water, of turpentine in water, or pure glycerin. Once the stomach is empty, salines, calomel, or castor oil are given until free peristalsis is established, after which the bowels are kept moderately loose. Let me add that opium should never be administered in any form, as it masks our only prognostic symptoms.

Occasionally, a *diarrhoea*, irritative in character, that is, frequent, scanty, and associated with much straining, may be present, but it is more apt to appear with the subsidence of an attack, or to precede it, or to be the tendency between seizures.

Pain is always the initial symptom, and is attributed, as already stated, to errors in diet, cold, traumatism, menstruation, or no cause is known. At the beginning it is wave-like and paroxysmal in character, that of an ordinary colic. It may be diffuse, or be referred principally to the epigastrium or umbilicus, but it may be felt anywhere, right or left, above or below, its location having absolutely no diagnostic value. Most mistakes are made by relying on this symptom. The fact that the superior mesenteric plexus supplies the appendix, and that nerve irritation is apt to be felt at the nerve extremities, accounts for the former location, while the situation of the great sympathetic ganglia explains the latter. We find the same pain in strangulated hernia. Pressure upon a tender appendix usually causes pain which is referred to the umbilicus. Sooner or later, this pain generally becomes localized at the seat of mischief; then it is of diagnostic as well as prognostic value. It may be intense, even sickening, when perforation takes place, and indicates, also, by its location, the point of perforation, or abscesses distant from the McBurney point. I have found localized pain in one spot after another quite a constant symptom during the development of multiple abscesses. With the onset of a general peritonitis it usually disappears.

Tenderness, is after all, the deciding symptom ; without it we cannot make a diagnosis. When made out at the McBurney point it is almost pathognomonic. I have found the appendix in almost every conceivable position, and abscesses or perforations at a distance from this point, which represents the base of the appendix, its attachment to the caput coli, but, with slight variations, this was always *one* of the tender spots. In one case the appendical abscess was in an inguinal hernia, and yet this point was exquisitely tender and led to a correct diagnosis. Associated with a distinct tumor it indicates abscess, and its coexistence in other locations shows the onset of other lesions. Its greatest value is prognostic, its increase, its persistence, or even its stationary character being important danger signals.

Associated with the tenderness and corroborative of it, is the *rigidity of the abdominal wall*, particularly of the right rectus muscle, which has already been referred to. A universally rigid, retracted abdomen usually points to fulminating peritonitis.

The *drawing up of the right lower limb*, also corroborative of tenderness, is inconstant, and generally a late symptom. It is quite common with abscess, particularly where this rests on the psoas muscle.

The *temperature* is given entirely too much prominence, and is probably of no diagnostic, although of moderate prognostic value. It has often caused a false sense of security until too late. It usually rises moderately at first ; this is more marked in children, variable in adults ; and it falls with the subsidence of the symptoms. A normal or subnormal temperature, perhaps, should be more feared than a high one. With impending or beginning protective perforation, we usually have a rise, and this goes on to a characteristic septic temperature with the formation of abscesses. The onset of peritonitis usually causes a fall, the more marked according to the rapidity of its spread, and the amount of the infective material. Before death from peritonitis it usually rises. On the whole it would probably be safer to discard the thermometer altogether than to rely on it as is now done.

The *pulse*, too, is over-estimated. It is unquestionably quickened, and when peritonitis sets in we are told of its characteristic pulse. Two cases that I at present recall have decidedly shaken my faith in its value, at least in patients we do not know well. In both I had reason to expect a pulse of 120 to 150, and yet it was 85 and 90. Fortunately I operated. When they recovered, the normal pulse

was found to be 50 and 60. A quickening pulse, decreasing in volume, is a bad symptom, and the converse, a good one.

Respiration will vary according to the amount of abdominal tenderness and distension.

The analysis of the *urine* is principally of use as a means of differential diagnosis, aside from what it tells us of the patient's operative chances. It will usually be scanty and contain a little albumen and indican. If bile be present, our suspicions would be aroused as to obstructive hepatic trouble, while the microscope might direct our attention to the kidney as a cause of the symptoms. Dysuria, tenesmus, and even retention are by no means uncommon. Occasionally pain is referred to the testicle which may be retracted.

We now naturally turn to the logical inference of these symptoms and classification, the prognosis. By this we mean not only the prospects of death or recovery, but also the indications for and against operative interference, as well as the value of the different symptoms in deciding this point. An analysis of my cases shows one pertinent fact, *i.e.* if we operate in time all the cases get well; if we operate too late, provided nature has not come to our rescue, the patient dies. This experience is a unique one, for operative mortality is entirely absent. I do not wish to be understood, however, as making light of operations for appendicitis, for they undoubtedly have a mortality; but this is nothing as compared with that of waiting, which, at the lowest estimate, must be from 15 to 20 per cent.

The first requisite of success, then, is to make an immediate diagnosis. Once this is made, especially if the physician is thoroughly impressed with a case he has lost by delay, the patient is safe. I find such men usually need restraining rather than urging.

Given an acute, honest attack of appendicitis, and the symptoms should subside, as in one of indigestion, in a few hours, six, eight, ten or twelve, or after the bowels have been moved. In other words, such a case within this time should tell us unmistakably that it is getting well. Should the symptoms persist or increase during this time, or, to be *very* conservative, for twenty-four hours, in general the danger of an operation is much less than that of waiting. Again, at any of these named hours, if the symptoms, and, particularly, the pain or local tenderness, become worse, or even remain stationary, after beginning to subside, the danger of waiting overwhelmingly outweighs that of surgical interference. Lastly, if at any time during the one, two, or three weeks of convalescence, or even after recovery, tenderness at the pathognomonic point recur or get worse, it is better to cut than to wait.

On the other hand, the subacute, dishonest attacks are to be feared, because they are not recognized and because they are so treacherous in their results. The same indications must be our guide: persistent or increased tenderness, before or after subsidence, and the signs of abscess formation or peritoneal infection.

I am convinced that the one-week, then five-day and then forty-eight-hour time-limit must be further reduced to twenty-four hours *or less*. The diagnosis, and even the prognosis, must be settled long, before this and operation either decided on or done at or before this time.

Some 70 or 80 per cent. of attacks get well without operation, and the vast majority of them indicate that they are going to do so in much less than twenty-four hours.

Some 10 or 15 per cent. save themselves in spite of us, that is, nature shuts off the leaks, and we have encysted abscesses which evacuate themselves alone or by aid of the scalpel. They all show their danger signals within this time.

Some 10 or 15 per cent. more would die but for surgical aid, given in answer to this warning. The fact that this warning is not heeded in time causes the mortality of appendicitis.

There remain but the rare cases of hyperacute appendicitis which represent one per cent. or less. There is no way of distinguishing such attacks from those which are going to recover, and before we can look for the earliest possible subsidence we are confronted with a sudden picture of fulminating peritonitis or septic intoxication. They are probably doomed within a few hours. Richardson operated a patient at the end of six hours, and yet was probably several hours too late. Such cases can only be saved by operating every attack of appendicitis at its inception. Were this done the operative mortality in all hands would probably be greater than the death-rate of this class.

Two-thirds or more, then, do not require operation; about one-third can be saved by operation, or nature's method of cure, improved upon by recognizing the indications within the twenty-four hour limit. **One per cent. or less cannot be saved.**

There remain the cases which are operated between attacks. My experience with this class has been, I must confess, fortunate, for I know of deaths that have not been reported, and statistics show a small mortality. Of the two varieties, recurring and relapsing appendicitis, the latter are those calling for operation, as a rule. The indications in any case are, persistence of tenderness between attacks, repeated seizures, increase in their frequency or severity; interference with the general health, which may show itself as disturbances

of digestion or invalidism from pain ; occupation of the patient, or residence and travel at a distance from skilled surgical aid. I find now that the surgeon has rather to restrain, than urge patients in operations between attacks, such is public opinion in our large cities, and while I write to urge on my colleagues the necessity of recognizing the disease at once, and operating early *during attacks*, I would counsel discretion in the matter of preventive operations, or those *between attacks*. In fact, some of the requests for operation I have met with make it assume an almost cosmetic character, *e.g.*, a parent asks us to circumcise his boys, and remove the appendix from all his children.

When should we not operate in appendicitis ? Let me say a word here to my fellow-surgeons : We have been in the habit of operating every case, no matter how hopeless, in order to give the patient the only chance, hoping against hope that we might be wrong as to the exact character of the lesions, and taking, therefore, the blame which is always laid at the door of an operation, to try to save a life. There are a couple of recorded operative successes in such cases, and there is, also, at least one published recovery by leaving such a patient alone.

Should we not rather say frankly to the family, not perhaps, that we are called in too late, but that operation offers one chance in a thousand, or less. Let them decide whether they will take this chance, or give their loved one euthanasia and a peaceful death, with a still more remote possibility of recovery.

A distended belly, bubbling over of intestinal fluids, possibly of a fecal odor ; absolute silence on auscultation over the abdomen ; complete constipation ; small, wiry, rapid pulse, climbing temperature ; embarrassed respiration, and hippocratic face, are a combination which we know too well to be fatal when once well established. I have operated such cases, and so have others. Should we not, for the sake of our art, restrain our hands, let the blame fall where it will. It is not a question of courage but of judgment. The time has come when an enlightened public has awakened, and demands that the physician recognize appendicitis at once, and call in the surgeon in time. Let us "read the writing on the wall."

ANALYSIS OF PERSONAL EXPERIENCE, WITH ILLUSTRATIVE CASES.*

In looking over my records, I find that I have operated for ap-

* Abstract of a paper read before the Southern Homeopathic Medical Association at Chattanooga, November 15; 1894.

pendicitis ninety-one times, thirty-four of these being done since January 1, 1894.

To these might be added twelve operations for abscess of more or less obscure origin, and in various locations, which I am convinced were due to appendicitis, but concerning which there was an element of doubt. Including these, the total number would be one hundred and three.

Again, I have operated on three cases in which I had previously made the probable diagnosis of a condition originating in the appendix, but in which the cause was either in the uterine adnexa on the right side or could not be demonstrated. Fortunately, the resulting conditions were such as to imperatively demand surgical interference irrespective of the cause.

Of these ninety-one operations, sixty-six were performed during attacks, and twenty-five between attacks. There were no deaths in the latter class. Of those operated during attacks, in thirty-four nature had encysted the infection, forming localized abscesses. Fifteen of these were evacuated *across* the free abdominal cavity, while in nineteen the abscess was attached to the abdominal parietes, and was evacuated without opening the free peritoneal cavity. If we add to these the twelve cases of somewhat doubtful abscess, we have forty-six more without a death, *but* these forty-six (or thirty-four) cases were operated too late, or, rather, not early enough, as a leak or an extra-appendicular infection had taken place before the condition was recognized or surgical intervention undertaken. Had nature not come to the rescue with her protective adhesions, septic peritonitis would have sealed the patient's fate.

This peritoneal infection has been, in my operative experience, the only cause of death. Thus, I have operated twenty-four cases in which a more or less general, septic peritonitis was present, that is, free, non-encysted pus in the abdominal cavity. As far as the purpose of this paper is concerned, it is not necessary to enter into the subject of cultures made from this effusion. In five of these an encysted abscess had suddenly ruptured; two recovered. In five more there were several encysted pus collections among the intestines in different portions of the abdomen, leakage from which had gone on until, finally, a general septic peritonitis was established. All of these died. On the other hand, I have met with one case of such multiple abscesses, operated before general peritoneal infection had taken place, which recovered. Of the remaining fourteen, nine died. In two, there was a coincident, acute, mechanical bowel ob-

struction. As regards the proper time for operation, these twenty-five cases also were operated too late.

There remain six cases in which no unprotected, peritoneal infection had as yet taken place, and which were therefore operated in time; they all recovered.

Lastly, I have operated one case of fulminating appendicitis, in less than ten hours from the onset of the attack, with a fatal result.

The following table will show, at a glance, the substance of the above data. It is worthy of note that of seventy-eight (or certainly sixty-six) cases operated during attacks, only six were operated, strictly speaking, early enough, while it is a question in the seventh, the case of fulminating appendicitis, whether we can ever operate this class in time.

Cases operated during attacks.	Number of cases.	Not operated in time.	Number of deaths.
1. <i>Abscesses</i> :			
(Transperitoneal route),	15	15	0
2. <i>Abscesses</i> :			
(Extraperitoneal route),	19	19	0
3. <i>Abscesses</i> :			
(Extraperitoneal route; doubt as to origin),	12	12	0
4. <i>Abscesses</i> :			
(Multiple; transperitoneal route; no general peritonitis),	1	1	0
5. <i>Peritonitis</i> :			
(Non-encysted, suppurative), . . .	14	14	9
6. <i>Peritonitis</i> :			
(Non-encysted, suppurative, from ruptured abscess),	5	5	3
7. <i>Peritonitis</i> :			
(Non encysted, suppurative, from multiple abscesses),	5	5	5
8. <i>Fulminating appendicitis</i> ,	1	?	1
9. <i>Acute Appendicitis</i> :			
(Without general peritoneal infection or abscess formation),	6	0	0
	78	71	18
Cases operated between attacks,	25	0	0
	103	71	18

Aside from this personal operative experience, I have gone through my records to find the histories of all non-operative cases. I have been consulted in seventy-nine cases with a view to deciding the question of surgical interference. I cannot get the data of my hospital experience in this connection, as it would be a next to impossible

task to hunt through the entire records of several hospitals for such cases.

Of these, five cured themselves by emptying the abscess into the bowel, one by evacuation into the rectum, another by spontaneous rupture externally, while two died from the escape of pus into the pleura, and two more refused operation and succumbed. Fifteen were operated at some subsequent time, while the balance recovered from the attack or attacks in which they were seen without requiring surgical interference. A number are still under observation with a possibility, if not a probability, of coming to operation. This very fact is one of the greatest stumbling blocks in the matter of the comparative statistics between medical and surgical treatment. A patient has eleven attacks; in ten he is "cured" medically; in the eleventh, while *being* "cured" medically, a general septic peritonitis develops; the surgeon opens the belly, and the patient dies. Result: cures by medical treatment, 100 per cent.; deaths by surgical treatment, 100 per cent.!

Of course, the majority of cases a surgeon sees are operative, as most physicians do not call him until dangerous symptoms are present. Still I think the proportion of cases not operated, as above cited, will exonerate me from any accusation of unnecessary operating, while the proportion of cases operated too late, as well as the horrible mortality, when general peritoneal infection has taken place, will emphasize the importance of early operation. In justice to myself I should add that, with but very few exceptions, I have operated as soon as practicable after seeing the patients.

ILLUSTRATIVE CASES FROM THIS YEAR'S WORK.

(1) Miss T., thirteen years old, was suddenly taken in the evening with severe, diffuse, paroxysmal, abdominal pain and vomiting. Menstruation was expected; the bowels were constipated. The McBurney point was exquisitely tender. A dose of castor oil was given by the mother, and before morning there was free purgation with a subsidence of all symptoms; unmistakable proof, in other words, within eight or ten hours that the attack was over. The iliac pain and then the tenderness persisted for some ten days, during which time she was kept rigidly in bed, strictly dieted and received the indicated remedial treatment; but the latter symptoms steadily subsided without interruption. Recovery was complete, and no tenderness or pain has been felt since (six months). This was her first attack.

Here was a case of average, acute appendicitis, appendicular colic, as it is termed by some, or, by others, stercoral appendicitis, the escape of the imprisoned faeces bringing the attack to an end.

(2) Mrs. W., sixty years of age, was taken at 4 A.M. with the same symptoms as in Case I., but they were of greater intensity, producing a condition of collapse, which apparently bordered on death: diffuse abdominal pain, vomiting, constipation, coated flabby tongue, cold extremities, pinched features, rigid right rectus muscle, and exquisite tenderness over the appendix. The bowels could not be moved even by high enemata. By noon, when I saw her, under the administration of camphor by Dr. J. H. Reading, she had rallied and most of the symptoms were gone, with the exception of a diminishing right iliac tenderness. The bowels were then freely opened with salines, and the tenderness continuously subsided, until it had entirely disappeared in a week. So far as we could discover this was her first attack.

This is another instance of acute appendicitis, with more severe symptoms. In eight hours or less the attack was practically over, and the remaining tenderness progressively and uninterruptedly disappeared.

The lessons to be learned from these two cases are: (1) the early subsidence of the symptoms or an unmistakable turn towards recovery, certainly within twelve hours, and (2) the progressive and uninterrupted subsidence of all the symptoms, particularly the tenderness.

(3) Master J.—, æt. 8 years, was taken in the morning with severe colicky pain, vomiting, constipation, etc.; almost the same symptoms as in Case I. I saw him soon after noon and found the characteristic face of peritonitis, flat, even retracted, hard abdomen, and exquisite tenderness all over the right side, but most marked just below the rib border (the cæcum in children may persist in its fetal location up under the liver). As soon as preparations could be made, the abdomen was opened and the following conditions found:

The cæcum was up under the liver, the appendix, a miniature one, was completely gangrenous, unprotected, not perforated, and there were no gross evidences of peritonitis, neither injection, serum, nor pus. Early the next morning the child was dead. The symptoms were those of an overwhelming septic intoxication, with purging, vomiting, both blood-stained, wild delirium and then intensifying coma.

There is no way as already stated, of distinguishing such fulminating cases from those that are going to subside, until too late.

A somewhat similar condition may suddenly develop in consequence of the rupture of an abscess. Here the symptoms are rather those of collapse. I have succeeded in saving two such cases, in one only because nature stopped the avalanche, weakly and temporarily it is true, limiting it clumsily and partially, to the right side of the abdomen, while in the other, instant operation saved the patient. On the other hand, I lost a patient last summer, because she was up and about until she finally consulted her physician, who found an encysted abscess. She was at once ordered to bed, but before she could be operated, rupture took place and established a diffuse peritoneal infection.

On the other hand, it would be interesting to know the condition of the appendix in Cases 1 and 2, those that recover, that do not go on to gangrene or perforation. I had the good fortune to observe what was probably such an appendix in a case of strangulated hernia.

(4) Middle aged male, with strangulated, right, oblique, inguinal hernia of less than twenty hours' standing, which had been subjected to severe taxis under ether. Aside from the usual symptoms, which could be attributed to hernia, there was the undoubted appendical tenderness to point pressure. The intestine, the lower end of the ileum, was gangrenous, and some six or seven inches required resection, the ends being united by Murphy buttons. The appendix was in spasm, pointing southeast and curved forward. It was evidently full of something, which could not be squeezed out by pressure, and after removal, when laid on the table, it emptied itself of a mass of soft faeces. Its walls and mesentery were thickened, and gave evidence of chronic, inflammatory changes, plus some acute vascular injection. It may be worth while incidentally, to note the after history of the buttons; the case being septic, the abdomen was packed with gauze. On the fifth day the wound was dressed and the buttons, one of which was in the colon and the other in the ileum, were found to have escaped, and to be lying loose in the caecal pouch. They were not passed until the fifteenth day. The pack proved very useful, because the line of union, which was ideal in its intestinal extent, leaked at the mesenteric junction. The faecal fistula has since closed.

The condition of the appendix in this case, one which I have met with several times during attacks, might, in some minds, raise a doubt as to the necessity of operation. It also supports the obstructive or stercoral theory. In order not to multiply cases I will discuss the question here. Such appendices have been always filled

with fluid (cystic) or with fæces, and could not be emptied before excision. They were in a state of spasm and curved forward or to one side. Their walls and mesentery showed evidences of chronic inflammatory changes, but beyond a moderate, acute congestion they presented no signs of perforation or gangrene. All the symptoms disappeared after excision, which was undertaken on account of the persistence of pain and tenderness. These are the cases that often get through by the aid of that treacherous siren, delay. I can say, however, without hesitation, that they are much safer operated than let alone. We can only prove this by analogy. I have operated for the same reasons, at the end of similar periods of time, and found the appendix presenting the same condition of spasm, the same curvature, full of soft fæces or fluid, entirely unprotected, but instead of being simply congested, it was gangrenous. Septic peritonitis was present too, and the patients usually died. The most dangerous appendix is an unprotected one, and the only means of distinguishing between these two conditions is to await the signs of a general septic peritonitis, the presence of which seals the patient's fate. Our only safety is in operating early, as soon as the symptoms persist beyond the time of an ordinary attack of indigestion, say ten or twelve hours; or if, when subsiding, the symptoms and particularly the tenderness, get worse, or even stop improving and remain stationary. This is particularly important in mild or sub-acute cases which are very treacherous as already stated.

(5) Male, thirty-two years old, was taken with very mild symptoms a week before operation. The picture was one of ascent or aggravation for some twelve hours, and then a very gradual descent or amelioration for about five days; then a moderate increase, followed by a diminution of everything but the tenderness. On account of this symptom his physician, Dr. W. C. Powell, summoned surgical aid. When operated, late at night, every symptom was practically gone, but the tenderness, which was exquisite. Section showed an absolutely unprotected appendix, deeply injected, and gangrenous in several spots. It was surrounded by a quantity of sero-pus.

Here was a subacute appendicitis, usually treated on the expectant plan, sneaking on silently to an impending, if not beginning, septic peritonitis, which was nipped in the bud by the indication: persistence of one symptom—tenderness. I have reported an almost identical case, in which operation was too late, and a very valuable life lost.

It has been said that previous attacks, by causing adhesions about

the appendix, as shown by tumefaction, greatly lessen the danger of peritoneal infection, for safe abscesses are apt to form. That we cannot always rely on this is shown by the following cases :

(6) J. I——, thirteen years old, was taken about noon with the already enumerated symptoms of an ordinary attack. Dr. I. G. Smedley made an immediate diagnosis of appendicitis at his first visit, late in the day. He saw the patient again early the next morning, when the pain had diminished, the bowels had been moved, the vomiting, and the nausea even, had ceased ; the temperature had come down from 103° to 100° , while the pulse-rate remained the same. The tenderness, however, was unchanged, or perhaps increased ; there was an indistinct tumor in the right iliac fossa, some beginning abdominal distension, and the boy had a suspicion of a hippocratic face. He had had two previous attacks ; the first one quite severe and long-lasting, in fact, an illness that was thought to be a "short typhoid." He was operated in less than twenty-four hours from the onset. When the abdomen was opened, there was a gush of thin, stinking pus from the general cavity, showing an established, non-limited, more or less general, septic peritonitis. The appendix, as large as my thumb, was imbedded in old, firm adhesions, but surrounded by a beginning abscess containing a couple of ounces of fetid pus, which was seen to be leaking before it was touched. The appendix was cystic, and large enough to admit the little finger ; gangrenous in spots, and perforated. The occlusion of a cystic appendix was well shown in this case, for the ligature cut through and could not be reapplied ; yet there was no faecal leakage.

This was an apparently honest attack, followed by a perforation ; an attempt to form an encysted abscess, leakage, and peritonitis, all in less than twenty-four hours. Had nature failed in the first attack to form protective adhesions, this patient, too, would have been lost. As it was, he made a good recovery, and is well and hearty to-day. The coils of intestines were carefully wiped, the appendix excised, and the whole right side of the abdomen packed with iodoform gauze. A week later, this was removed, a second toilet made, and the wound closely sutured. It united without reaction. The indications for operation were persistence or increase of tenderness, slight abdominal distension, and the facial expression.

(7) J. B., 21 years old, was taken in the afternoon with a third attack, similar to the previous ones which had been recognized by Dr. L. T. Ashcraft, and yielded quickly to medicinal treatment followed by a saline. The symptoms apparently subsided under the

same treatment, but twelve hours later he suddenly felt worse, or, as he described it, "very sick." This, with exquisite tenderness, and an expression of suffering, were the only symptoms. I could not operate him until twenty-four hours after the onset, as, strange to say, his was the third appendicitis operation that day. Section showed a gangrenous appendix, containing a concretion at the tip, where a perforation had taken place, which was protected by an adhesion, the result of a localized fibrinous peritonitis during one of the previous attacks. Excision, pack, secondary suture, and quick recovery.

The practical lesson is the sudden accession of pain, probably at the moment of rupture, during a subsiding attack, no less severe than two previous ones.

I have since operated, for Dr. McLeod, a young man between attacks, who presented the condition that must have existed in this case; a soft, I might say rotten spot, protected by a single weak adhesion.

In a case of Dr. Branson's, I would have regretted operating a young lady, had she not been rendered a chronic invalid and had not the result been satisfactory, because the entire appendix, an escaped concretion and a little lump of dried-up pus were so imbedded in the cæcum that it required a most careful and tiresome dissection to liberate them. Some five years ago she had suffered from a severe and long attack of so-called peritonitis supposed to be "ovarian."

This regret was dissipated not long since by a case of Dr. J. P. Lukens, a lady who, in less than twenty-four hours, developed an intense aggravation of pain and tenderness. Section showed that an attack of so-called peritonitis seven years previously, for which many physicians had locally treated her uterus, had imbedded her appendix, in like manner, into the walls of the cæcum, so that I had the greatest difficulty in finding the little organ; in fact, would have failed but for the infallible guide, the anterior muscular bundle. And yet, within twenty-four hours, not only had the appendix become perforated, but this firm, ancient, cicatricial tissue had given way, and had it not been for the ever-watchful omentum that pounced on the leak, surgery would have been, even then, too late. The indications were persistence and increase of local pain and tenderness and a peculiar "frown" which impressed us with these facts.

(8) M. R., 12 years old, referred to me, after a long illness, for supposed tubercular peritonitis, with enormous effusion and profound sepsis. The distension was so great and the child so nearly dead,

that we began the operation almost without anæsthesia. On opening the abdomen, pus poured out, as from a geyser. It was estimated that fully two gallons were evacuated. The abscess was bounded by the floor of the pelvis below, the abdominal walls, the spine and the diaphragm. Up under the latter the intestines and the general peritoneal cavity were squeezed into an inconceivably small space. A gangrenous appendix was imbedded in the abscess wall. She made a surprising though tedious recovery.

No matter how extensive such pus accumulations may be, the prognosis is usually good if the general peritoneal cavity is not invaded. A similar case has been reported by Pollard, in which nature almost completed the cure by beginning to evacuate the pus.

When these abscesses become attached to the abdominal parietes, as in the above case, their evacuation is a very simple matter, the principal difficulty usually being to get through and through drainage, without which many are slow to heal. Encysted pus collections following appendicitis should be manipulated with great care or they will be ruptured, particularly when they are first noticed. In fact, it has been said that there is a time in the history of such abscesses when it is too late for an early operation and too early for a late one (Richardson). In other words, it is safer to wait until the adhesions grow firmer and stronger, lest, in operating, we spread the infection.

In general, it is better to leave the appendix alone in all encysted abscesses, unless it is conveniently situated and readily gotten at, for fear of opening the abscess wall and disseminating the infection. It is far safer to dig out the little organ subsequently if its presence prevents healing.

If these abscesses do not adhere to the abdominal wall, they must be evacuated across the free abdominal cavity, and a funnel or channel of discharge must be made by a gauze pack. The outlook here, too, is good, although to prevent ventral hernia I have resorted to a late secondary suture.

(9) Miss C., seventeen years old, was taken with her third attack early in the morning. I saw her the afternoon of the following day, and operated as soon as preparations could be made. The bowels had moved, the temperature had come down, there was no distension, etc., but the pulse was increasing in rapidity, the McBurney point was exquisitely tender, and below it was an indistinct tumor to which all pain was referred. The appendix was found hanging over into the pelvis, its tip gangrenous and perforated, and in the centre of a small abscess, containing an ounce or two of pus, walled

in by old adhesions. The seat of operation was surrounded by sponges before the abscess was evacuated, its cavity cleaned, and the appendix excised. The infected area was then packed with a strip of iodoform gauze, while the general abdominal cavity was shut off by the same material. Six days later the wound was closely sutured. The result has been, in every respect, satisfactory.

Had this patient died, I should never have forgiven myself, as I declined to operate shortly after her second attack, about a year before. In fact, the attending physician, Dr. D. W. Shoemaker, and the parents were rather anxious that I should do so. At that time her health was good, and there was no tenderness at the McBurney point, which was very characteristic during the attacks. If I had made a vaginal or even rectal examination I might have found the adhesions around the tender tip of the appendix hanging down into the pelvis.

Aside from the disadvantages and dangers already referred to, which prove that all these cases operated too late are saved by nature in spite of us, there is a constant danger of rupture of the abscess and the development of a fatal peritonitis. Sudden rupture has already been referred to, but there is a more treacherous, sneaking form of infection which goes on to the formation of multiple abscesses in different parts of the abdomen, until, finally, a general septic peritonitis is developed.

(10) Master M., eleven years old, was taken on a Tuesday, last winter, with a moderate attack of appendicitis. The diagnosis of beginning typhoid was made, and the indications already referred to must have been overlooked, for I was told that he complained of paroxysmal, abdominal pain, which steadily increased in severity until I saw him the following Sunday. His expression then was anxious, his temperature high, and his abdomen considerably swollen. There were two tumors, one in the usual location and one low down on the other side. Section showed a bellyfull of pus and two abscesses in the above-mentioned places, all caused by a perforated appendix.

(11) Mr. —, twenty-one years old, had suffered from several attacks, which had appeared with increasing frequency and severity; the appendix was always tender and the right side painful, interfering with all exercise. The bowels were habitually constipated, the tongue coated, the appetite variable and the complexion sallow. The abdomen was opened by a modification of the gridiron method of McBurney: an incision at right angles to a line from the anterior

superior iliac spine to the umbilicus, going through the skin, fat, fascia and external oblique; retraction of this wound and a separation of the internal oblique and transversalis fibres in the above-mentioned line or at right angles to the first incision; retraction again and division of the peritonæum and its fat in the original line. The appendix was thick, pale, cystic and adherent at its extremity, while its mesentery was much thickened by chronic inflammatory infiltration. It was amputated by laying back a peritoneal flap, tying off the rest of the organ and suture of the flap and raw remnant of the mesentery over the stump. Close suture of the abdominal wound. Recovery was excellent, union primary and the cicatrix firm. The improvement in general health, digestion and color are very gratifying.

This is an example of the relapsing variety, the patient showing local symptoms constantly between attacks.

(12) Miss A., seventeen years of age, subject to frequently recurring attacks of varying severity for a year or more. They appeared of late on the slightest provocation, and even without apparent cause, one seizure following the preceding one almost before recovery was complete. When I saw her there was little or no local tenderness, but the digestive symptoms were marked and the tongue and color were bad. The abdomen was opened by the gridiron incision, double instead of triple, and an appendix found which was large, acutely bent on itself, cystic beyond the bend, not presenting any marked macroscopic abnormalities. The meso-appendix, however, was greatly thickened and showed, under the microscope, marked vascular and inflammatory changes. I have purposely avoided entering into a detailed account of the histology of the appendices removed, but they have been carefully studied under my direction.

This case is probably one of the recurring variety, for no tenderness was present. It shows the results of changes in the meso-appendix and of flexion of the organ itself. The general improvement was very gratifying.

